



One-to-one computing programs only as effective as their teachers

Experts say 1-to-1 computing research needs to focus more on classroom practices—and less on equipment

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Feb 16th, 2010

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Studies show that 1:1 success depends more on teachers than on the equipment itself.

A compilation of four new studies of one-to-one computing projects in K-12 schools identifies several factors that are key to the projects' success, including adequate planning, stakeholder buy-in, and strong school or district leadership. Not surprisingly, the researchers say the most important factor of all is the teaching practices of instructors—suggesting school laptop programs are only as effective as the teachers who apply them.

The studies were published in January by the [Journal of Technology, Learning, and Assessment](#), a peer-reviewed online journal from Boston College's Lynch School of Education.

Despite growing interest in school 1-to-1 computing programs, “little published research has focused on teaching and learning in these intensive computing environments,” say editors Damian Bebell, an assistant research professor at BC's education school, and Laura O'Dwyer, an assistant professor of education.

According to Bebell and O'Dwyer, a big mistake that both researchers and educators make in talking about 1-to-1 computing programs is assuming that by adding computers to the classroom, nothing else has to change.

One-to-one computing “refers to the level at which access to technology is available to students and teachers; by definition, it says nothing about actual educational practices,” say the editors.

The studies they present are intended to shed more light on how 1-to-1 programs influence, and integrate with, teaching practices.

The studies found improvements in student engagement and modest increases in student achievement among classes using laptops effectively. But results varied widely among the various programs.

For example, in a study of laptop programs in five public and private middle schools in western Massachusetts, Bebell and Rachel Kay, a doctoral candidate in the Educational Research, Measurement, and Evaluation program at BC’s Lynch School of Education, found that teaching and learning practices changed when students and teachers were given laptops, wireless learning environments, and other ed-tech resources.

Bebell and Kay found that while the implementation and outcomes varied across all five schools and across the three program years, access to 1-to-1 computing led to measurable changes in teacher practices, student engagement and achievement, and students’ research skills. Specifically, seventh graders in the second year of the program showed statistically significant gains on state test scores in English and language arts after controlling for prior achievement.

But one school struggled with laptop implementation so much that students weren’t using technology any more frequently by the third year of the program than were students in non-laptop classes.

It’s “impossible to overstate the power of individual teachers in the success or failure of 1-to-1 computing,” Bebell and Kay write. “Teachers nearly always control how and when students access and use [the] technology during the school day. In addition, teachers must make massive investments in time and effort to adapt their teaching materials and practices to make the 1-to-1 environment effective and relevant.”

Similarly, a study of laptop use in 21 high-need Texas middle schools noted that “teacher buy-in ... is critically important, because students’ school experiences with [the] technology are largely dictated by their teachers.”

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